Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1-9. (Canceled)

10. (Previously amended) A receiver, comprising:

a substrate;

a first mixer that performs up-conversion and is disposed on the substrate;

a differential filter coupled to an output of the first mixer;

a second mixer that performs down-conversion and provides image rejection, disposed on the substrate and coupled to an output of the differential filter, wherein the second mixer is a differential I/Q mixer;

a first polyphase circuit disposed on the substrate that provides I and Q local oscillator signals for mixing in the second mixer; and

a second polyphase circuit disposed on the substrate that combines I and Q output signals of the second mixer to complete the image rejection;

wherein the differential filter is external to the substrate and has a passband that is determined to pass an up-converted output of the first mixer.

11. (Previously presented) The receiver of claim 10, wherein the differential filter is a surface acoustic wave (SAW) filter.

12-13. (Canceled)

- 3 -

Carr *et al.*
Appl. No. 09/766,048

14. (Previously presented)   The receiver of claim 10, wherein the substrate is processed using CMOS.

15-16. (Canceled)

17. (Previously presented) The receiver of claim 10, wherein the first mixer and the second mixer are differential mixers.

18. (Currently amended) The receiver of [[clam]] <u>claim</u> 10, wherein the differential filter removes at least one channel from a plurality of channels received from the output of the first mixer.

19-24. (Canceled)

25. (Previously amended) A method for processing a RF signal having a plurality of channels, comprising:

(1)   mixing the RF signal with a first differential local oscillator signal to produce a first differential IF signal;

(2)   removing at least one unwanted channel from the first differential IF signal using a differential filter having a passband that is higher in frequency than the RF signal to produce a second differential IF signal;

(3)   adjusting the first local oscillator signal so that a selected channel in the plurality of channels is shifted into a passband of the differential filter;

(3a)   generating a second differential local oscillator signal having I and Q

components using a first polyphase circuit;

(4)   mixing the second differential IF signal with a second differential local

oscillator signal to produce a second differential IF signal, including combining I and Q

differential IF outputs in a second polyphase circuit to produce said second differential

IF signal;

wherein steps (1), (3), (3a) and (4) are performed on a common substrate, and

wherein step (2) is performed external to the common substrate.

26. (Previously presented) The method of claim 25, wherein the plurality of

channels are television channels.

27. (Previously presented) The method of claim 25, further comprising the step

of:

(5)   removing at least one unwanted channel from the second differential IF

signal.

28-29. (Canceled)

30. (Previously presented)   The method of claim 25, further comprising the step

of:

(5)   performing automatic gain control on the second IF signal on the common

substrate.

31. (Previously presented) The method of claim 25, wherein step (4) includes the step of removing at least one unwanted image from the second differential IF signal.

32. (Previously amended) A receiver for processing a plurality of channels, comprising:

a substrate;

a first differential mixer disposed on the substrate, and that performs up-conversion;

a differential filter coupled to an output of the first differential mixer and configured external to the substrate, wherein the differential filter has a passband that is determined to pass an up-converted output of the first differential mixer;

a second differential mixer, disposed on the substrate and coupled to an output of the differential filter, said second differential mixer providing down-conversion and image rejection;

a first polyphase circuit disposed on the substrate that provides I and Q local oscillator signals to an input of said second differential mixer; and

a second polyphase circuit disposed on the substrate that combines I and Q output signals of the second differential mixer to complete the image rejection.

33. (Previously presented) The receiver of claim 10, further comprising a first local oscillator disposed on said substrate and providing a first local oscillator signal to said first mixer.

34. (Previously presented) The receiver of claim 33, wherein a frequency of said first local oscillator signal is varied to perform channel selection.

35. (Previously amended) The receiver of claim 33, further comprising a second local oscillator disposed on said substrate and providing a second local oscillator signal to said first polyphase circuit.

36. (Previously presented) The receiver of claim 35, wherein at least one of said first local oscillator signal and said second local oscillator signal are differential.

37-38. (Canceled)

39. (Previously presented) The receiver of claim 10, wherein said first mixer includes a differential input port, a differential output port, and a differential local oscillator port.

40. (Previously presented) The receiver of claim 10, wherein said second mixer includes a differential input port, a differential output port, and a differential local oscillator port.

41. (Previously amended) The receiver of claim 32, further comprising:

a first differential local oscillator disposed on said substrate and having an output coupled to a local oscillator port of said first differential mixer; and

a second differential local oscillator disposed on said substrate and having

an output coupled a local oscillator port of said first polyphase circuit.

42. (Currently amended) The receiver of claim 41, wherein a frequency of said

first differential local oscillator is varied to perform channel selection in said first

differential filter.